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Digital Technologies in Ensuring Justice Scientific and Practical Significance of Artificial Intelligence

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Abstract

This article comprehensively analyzes the scientific and practical significance of digital technologies and artificial intelligence in ensuring justice. The advantages and risks of applying artificial intelligence in the judicial sphere are considered using the example of world experience - the USA, the European Union, France, Singapore, and Estonia, which is the most successful example of digital statehood in the world. Based on the tasks set forth in the Address of the President of the Republic of Uzbekistan to the Oliy Majlis in December 2025, three scientifically based strategic proposals for the digitalization of judicial justice have been developed.

Keywords: Artificial intelligence, justice, digital transformation, algorithmic justice, e-court, e-Estonia, predictive analysis, legal system.

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1. Introduction

In the Address of the President of the Republic of Uzbekistan

Sh. Mirziyoyev to the Oliy Majlis in December 2025, the issue of reforming the judicial and legal system and introducing digital technologies and artificial intelligence into it was defined as a direction of special strategic importance. This appeal is not only an expression of political will, but also a concrete task facing the legal and technological spheres.

Today, artificial intelligence (AI) tools are used in legal proceedings in more than 60 countries around the world. According to the OECD's 2022 report, countries that have invested in digital judicial infrastructure have significantly increased judicial efficiency and expanded access to judicial services. At the same time, issues of algorithmic justice, data protection, and human control are on the agenda as serious scientific problems.

The penetration of artificial intelligence technologies into judicial systems began in the 1990s and continues to develop steadily in the 21st century. Today, AI tools are mainly used in judicial practice in four areas: predictive analysis (risk assessment); automation of documentation; intelligent search and analysis of precedent databases; and online dispute resolution (ODR).

In the USA, the COMPAS (Correctional Offender Management Profiling for Alternative Sanctions) system has been used in more than 40 states since 1998 to assess the risk of recidivism in criminal cases. The system provides judicial authorities with indicators of the risk of recidivism based on statistical analysis and helps determine the punishment.

However, a study by Dressel and Farid (2018), published in Science Advances, showed that the accuracy of the COMPAS system (65.4%) practically does not differ from the predictions of ordinary people without legal training (62.1%). The study was conducted based on data from "more than a thousand defendants," and the results clearly demonstrated the limitations of algorithmic prediction.

A 2016 "Machine Bias" investigation by ProPublica magazine found that the system rated black defendants as "highly dangerous" twice as often as white defendants. This situation raised the problem of algorithmic fairness and clearly demonstrated the need for legal regulation of AI in the judicial sphere. "At the moment, there are no sufficient grounds to consider the algorithmic prediction of relapse to be superior to the human prediction - both work with approximately the same level of accuracy. - Julia Dressel & Hany Farid, Science Advances, 2018.

The EU AI Act (EC 2024/1689), which came into force in 2024, establishes special requirements for AI systems recognized as high-risk in the judicial sphere. According to Article 22 of this law, it is prohibited to accept analyses prepared by artificial intelligence systems as final documents without human control.

In 2017, France launched the "Justice numérique" program and implemented the "Predictice" platform. This system, which analyzes millions of court decisions, allows lawyers to predict the outcome of the case. The French experience has succeeded in creating public access to precedent law through the complete digitization of judicial archives.

The Singapore Courts system has introduced a mechanism for prompt consideration of ordinary civil disputes through the ODR (Online Dispute Resolution) platform. According to the 2023 Annual Report of the Supreme Court of Singapore, digital technologies have significantly reduced the burden on courts and ensured uninterrupted court proceedings during the COVID-19 pandemic.

Today, the Republic of Estonia, as a country with the most developed digital judicial system in the world, has been ranked second in the European Commission's "Justice Scoreboard" for many years. Estonia's experience serves as a particularly relevant example for Uzbekistan.

Estonia launched a strategy for the digitalization of the judicial system in the early 2000s, and by 2008 fully transitioned to conducting all court proceedings electronically. According to an independent assessment conducted by the European Bank in 2021, Estonia's judicial system received the highest score among audited jurisdictions on the digitalization indicator - 3 points (Maximum Maturity Level Assessment Tool).

Estonia's e-Justice system consists of three main components. The first is the information system of the e-File (e-toimik) center: all court cases, appeals, documents, and decisions are stored in a central digital database; data is entered only once, and all systems - the police, the prosecutor's office, the court - communicate through this database. The second is the KIS2 judicial information system: since 2014, it has been managing all court proceedings. Third - a public e-File portal: citizens can open a court case online, send a document, monitor the state of the case; identification is carried out using an ID-card or Mobile-ID.

According to official data from the Estonian Ministry of Justice, a 2019 "Justice Scoreboard" analysis showed that Estonia ranks second among EU countries in Denmark in terms of the duration of administrative and first instance court proceedings. In addition, court costs per capita are among the lowest in the EU countries - about 50 euros per capita.

In 2019, Estonia began developing the concept of an AI judge for small claims (less than 7,000 euros). However, according to the EU AI Act, the final decision in this system must be approved by a human judge. This "human-controlled automation" approach is currently the most justified model in global judicial practice. "The most important tool in the implementation of a digital judicial system is not technology, but the trust and readiness of all participants - judges, lawyers, citizens - for the system. - e-Estonia Justice Factsheet, 2023"

From the experience of Estonia, four main conclusions can be drawn for Uzbekistan: firstly, digital reform should begin with a reliable legal basis and institutional will; secondly, a unified platform for intersystem data

exchange is crucial; thirdly, user convenience should be the main criterion for implementing the system; fourthly, the digitalization of judicial services should be accompanied by increasing the digital literacy of the population.

It is advisable to consider the importance of digital technologies and artificial intelligence in judicial justice in three main scientific areas.

Over 850,000 cases were heard in Uzbek courts in 2024. According to Statistics, some cases are more than 18 months old

It extends to 2 years, which practically limits the right of citizens to timely access to legal protection. World Bank research shows that judicial efficiency has increased significantly in countries that have invested in digital judicial infrastructure (World Bank, Doing Business 2023). "Justice can be desired, but delayed justice is a denial of justice. - William Gladstone, Prime Minister of Great Britain, 19th century."

Scientific research has proven that the decisions of human judges can change under the influence of non-objective factors. A study by Danziger, Levav, and Avnaim-Pesso (2011) published in the journal PNAS, based on data from the Israeli password system, found that judges issued a positive decision in 65% of cases immediately after the procedure, and subsequently this figure gradually decreased until the next procedure. Researchers attribute this phenomenon to "cognitive fatigue." These results indicate the need for additional mechanisms to ensure the consistency of court decisions.

Digital platforms and electronic court systems (e-court) provide citizens with free access to court services regardless of their geographical location. For citizens of Khorezm, Surkhandarya, or Kashkadarya regions of Uzbekistan, it can be very difficult to apply to specialized courts. The E-court system can eliminate this geographical disparity. Susskind (2019) emphasizes in her work "Online Courts and the Future of Justice" that online courts can radically increase access to justice for segments of the population deprived of legal services, which constitute more than half of the world's population.

Taking into account the experience of E-Justice of Estonia , it is proposed to develop and adopt the national program "e-Court 2030" in Uzbekistan. The program should be implemented in stages. 2026-2027 - Pilot phase: Transition to digital record keeping of all court cases in the courts of Tashkent and Samarkand. 2027-2028 - expansion phase: all regions; online publication of court decisions. 2028-2030 - stage of full integration: connection to a single system with the prosecutor's office, notary, and the bar.

Within the framework of the program, it is necessary to: conduct all court cases electronically (paperless court); file lawsuits online; distribute court documents via SMS/portal; conduct cases via videoconference; and create a unified data exchange platform similar to Estonia's e-File system. The experience of Estonia shows that the full digital transition will allow reducing court costs to the lowest level among the EU countries and significantly reducing the time of consideration.

It is proposed to launch a pilot project "AI-Judge Assistant" on the basis of Tashkent city courts for 2026-2027, this system must work only as an assistant to a judge and not make any final decisions - the principle of "human-in-the-loop automation" will be strictly observed.

Functions of the system: automatic analysis of the precedent database and provision of statistics on similar cases; automatic copying and stenography of court reports; generation of templates in the preparation of documents; online tracker for the parties, tracking the state of affairs. The experience of Estonia shows that the automation of the writing work of court clerks and the speech-to-text system (which achieved a 92% accuracy) significantly saves their time.

It is proposed to strengthen at the legislative level the "Algorithmic Justice Standard" regulating the application of AI in the judicial sphere of the Republic of Uzbekistan. Based on the experience of the European Union's AI Act, the standard includes four basic principles.

The first principle is Transparency: In any recommendation given by AI systems, the basis of the algorithm should be open and explained in a language understandable by the judge. "Black box" algorithms are prohibited for use in court.

The second principle is equality and fairness: Based on the lesson learned from the COMPAS system in the USA, an annual audit by an independent audit body must be conducted to ensure that the system does not discriminate based on gender, nationality, or social status.

The third principle - Human-in-the-Loop: AI does not make any final court decisions; it only provides the judge with analysis and information. The EC AI Act and the experience of Estonia have proven that this principle is absolutely necessary in a democratic society.

The fourth principle - Data Protection: personal data related to litigation is protected in accordance with the Law of the Republic of Uzbekistan "On Personal Data" and the norms of the EU GDPR.

2. Conclusion

Based on the above-mentioned world experience and scientific analysis, several important conclusions can be drawn. Firstly, artificial intelligence and digital technologies create an objective opportunity to raise the judicial system to a qualitatively new level in terms of efficiency, objectivity, and openness. Secondly, Estonia's e-Justice experience shows that for successful digital transformation, a reliable legal framework, institutional will, and the training of civil society are more important than technological investments.

Thirdly, the example of the COMPAS system in the USA showed that algorithms are not fair in themselves, and they need to be regularly monitored and audited. Fourthly, the norms of the EU AI Act and the Estonian "human-in-the-loop" model are currently the most human-rights-compliant way to implement judicial AI.

The tasks outlined in the President of Uzbekistan's address in December 2025 demonstrate the strong political will for the digitalization of the judicial system. The proposed three strategic measures - the "e-Court 2030" program, the "AI-Judge Assistant" pilot project, and the "Algorithmic Justice Standard" - form a roadmap adapted and feasible to the conditions of Uzbekistan, taking an example from the experience of Estonia .i.

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